Water Quality in Alaska

Alaska FFA Association & USDA Northwest Climate Hub



Sockeye Salmon on the Wood River: NRCS





What is Water Quality?

- Can you drink it?
- Can fish and other aquatic organisms live in it?
- Does it look and smell healthy?
- Does it harm humans or the environment?
- We can observe and test water to determine water quality.



Climate Change & Water Quality

Increasing temperatures and irregular precipitation could cause:

- Permafrost thaw
- Increased risk of wildfire
- Coastal and riverine erosion
- Increased glacial melt

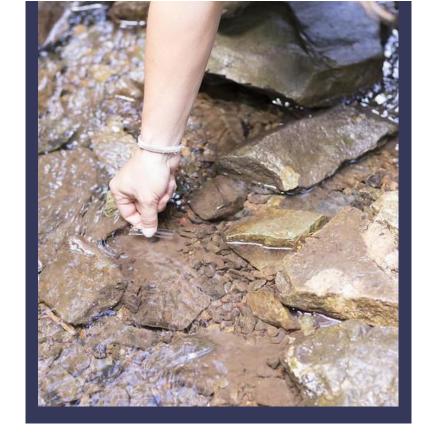
Waterways could experience increased erosion and pollution.







Top: Severe erosion on the Ninglick River. Credit: Romy Cadiente. Bottom: shrinkage of Hidden Creek Glacier. Credit: NPS.





Water Quality Monitoring

- Determines the effects of climate change and pollution on water
- Provides information on safety and health of waterways
- Involves fixed and temporary water testing stations
- Water temperature, dissolved oxygen (DO), turbidity, and pH are most common tests

Top: Water quality testing. USGS.

Bottom: Two stream sources meeting: cold, turbid glacial stream and a warmer, clear rainfall-fed stream. USFS.

Water temperature

the degree of hotness or coldness of water; can vary from season to season

- Determines what species can survive within a waterway
- Cool water supports more fish and aquatic organisms



Dissolved Oxygen (DO)

Measure of how much oxygen is dissolved in water and available to organisms

- Quick-moving water has higher dissolved oxygen levels
- Cold water has higher dissolved oxygen levels
- Most fish and aquatic species prefer high dissolved oxygen levels

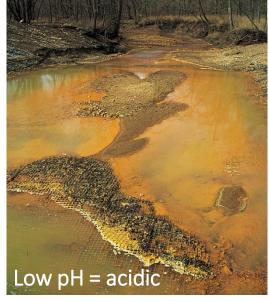




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measure of how acidic or basic water is.

- Ranges from 0-14
 - 7 is neutral
 - Less than 7 is acidic
 - Greater than 7 is basic
- Changing pH can be an indicator of pollution
- Most organisms prefer a pH of 6.5-9



Low pH (acidic) stream. Orange color caused by pollution from mine runoff. Credit: USGS

	pH 6.5	pH 6.0	pH 5.5	pH 5.0	pH 4.5	pH 4.0
Trout 🌬						
Bass 🖊						
Perch Perch						
Frogs 🐔						
Salamanders 👡						
Clams						
Crayfish 😘						
Snails 🙉						
Mayfly 🛁						

pH tolerance chart on aquatic life. Credit: USEPA

Turbidity

measure of the clarity of water

 High turbidity water is difficult to see through because of high sediment levels

Low turbidity water is clear

• Low turbidity water is preferred by fish and aquatic organisms— it's easier to breathe and see.





Top: Highly turbid river from a glacier. USGS. Bottom: Low turbidity stream with salmon. USGS.

Stream Discovery Videos on Water Quality Testing



https://www.youtube.com/playlist?list=PLyxnipvo-p0o5ur0xoAHd7LTIJMMLY0nv